

Appl. No. 09/933,542

Applicant: Pal, Anadish Kumar

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Examiner: JOSEPH WAKS

ABSTRACT OF THE DISCLOSURE

In order to determine the angular movement of an induction motor, it is generally necessary to connect some kind of sensor in the form of a tachogenerator, resolver or encoder. Some variable-speed drives determine the angular movement by assessing the wave shape generated by the drive when driving an induction motor. In this invention the method of sensing is different in two ways. One, it uses the hardware of induction motor itself as a low-power alternator producing alternating-current output with its voltage and frequency proportional to the rpm of the induction motor. Two, this method works only when the mains supply to the motor is removed either in a planned manner or accidentally. The method of self tachogeneration by an induction motor has been successfully utilized in the implementation of an uninterrupted power supply to keep supplying oil to a hydrostatic bearing in the event of sudden mains power outage. This property of an induction motor acting as a low-power alternator is due to some residual magnetism in the ferromagnetic circuit of the squirrel-cage rotor. To implement this invention, a set of electromagnetically operated changeover switches are required, so that the low-power tachogenerator signal from the induction motor does not sink in the low impedance of the mains power. This invention enables the detection of the angular movement of any induction motor coming to a standstill after a mains outage, or rotating due to some external mechanical force on the rotor. As a result, an induction motor when not supplied with electrical power can double up as a tachogenerator to sense a movement to which it is linked mechanically in many machine-tool and industrial applications.

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ABSTRACT OF THE DISCLOSURE

In order to determine the angular movement of an induction motor, it is generally necessary to connect some kind of sensor in the form of a tachogenerator, resolver or encoder. Some variable-speed drives determine the angular movement by assessing the wave shape with the help of the distortion in the wave shape generated by the drive when approaching a pole inside the driving an induction motor. In this invention the This new method of sensing is different in two ways: ways. One, it uses the hardware of induction motor itself as a low-power alternator producing alternating-current output with its of frequency and voltage proportional to the rpm of the induction motor. Two, this method only works only when the mains supply to the motor is removed either in a planned manner or accidentally. The method of self tachogeneration by an induction motor has been successfully utilized in the implementation of an uninterrupted power supply to keep supplying oil to a hydrostatic bearing in the case of sudden mains power outage. failure. The use of this method ensured the UPS only started inverting when receiving a signal from the induction motor rotating the large grinding wheels mounted on the bearing. In the case of the grinding wheels at a standstill the inverter of the UPS would not start in the case of a sudden power failure. This property of an induction motor acting as a low-power alternator is due to some residual magnetism left in the ferro-magnetic ferromagnetic circuit of the squirrel-cage rotor. To implement this invention, method, a set of electromagnetically operated, a changeover switches are switch is required, so that the low-power tachogenerator signal from self tachogeneration by the induction motor does not sink get sunk in the low impedance low impedance of the mains power mains. This invention enables the detection By using this new method, the direction of rotation and the amount of the angular movement can be determined of any induction motor coming to a standstill after a mains outage, held up or rotating due to some external mechanical force on the rotor. As a result, an An induction motor when not supplied with electrical power running can double up as a tachogenerator to sense some other a movement to which it is linked mechanically in many machine-tool and industrial applications.